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ABSTRACT

This document discusses an academic achievement study of selected Garvey School District students (N=179) as reflected on the CTBS (Comprehensive Tests of Basic Skills) scores of first-grade students at elementary school sites and covering a period of 6 school years starting with 1980-81. Findings compare (1) achievement in reading scale scores and percentiles; (2) achievement in language scale scores and percentiles; and (3) achievement in math scale scores and percentiles. Analysis is provided on teachers' comments about students and on attendance information. Conclusions are described with relation to reading, language, and math skills and ethnic groups. Inconsistencies of the study are also related. The need to replicate, expand, and improve the study are recommended. Tables and line graphs are included. Appended are teacher rating and student achievement forms. (SI)

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ACADEMIC ACHIEVEMENT OF SELECTED ELEMENTARY STUDENTS

IN A CULTURALLY DIVERSE DISTRICT

1980-86

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by

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Office of Research and Planning

Garvey School District

(Rosemead, California)

EA 021 026

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ACADEMIC ACHIEVEMENT OF SELECTED ELEMENTARY STUDENTS

IN A CULTURALLY DIVERSE DISTRICT

1980-86

INTRODUCTION

Historically, Hispanic students constitute a rather high percentage (50-60%) of the total student population in Garvey Elementary School District. There has been a rapid and steady increase in Asian student enrollment. To meet the needs of these students academically and linguistically, the District has implemented various bilingual programs. These programs include Title VII Bilingual Program, State-required Bilingual Classrooms, and Bilingual Individual Learning Programs (BILP).

This pilot study was intended to assess the academic achievement of selected Garvey School District students as reflected on CTBS scores. The present study included 1980-81 first grade students at elementary school sites, and covered a period of six school years. The pilot study was also aimed to determine the feasibility in expanding the scope of the study to other grade levels.

PURPOSES OF THE STUDY

The main purposes of the study were to collect information in answering four related research questions in an ex post facto design:

1. Do Limited-English Proficient (LEP) students in the district eventually achieve academically in reading, language, and math like English only (EO) and Fluent-English Proficient (FEP) students in the district?
2. How long does it take LEP students to achieve academically like EO/FEP students?
3. How long does it take LEP students to be reclassified as FEP students?
4. How well do LEP students sustain their performance once after they have achieved academically in reading, language, and math like EO/FEP students?

A secondary purpose of the study was to identify any potential factors which might have contributed to the difference in the academic achievement of the selected students. Special attention was given to students' attendance information and teachers' annual comments about students which were recorded in the cum folders.

PROCEDURES

A. Selection of Sample Students

District files on language information and CTBS scores were the primary sources used in identifying sample students. A grade 1 student was included in the study if his/her name was identified in one of the 1980-81 sources and also in one of the 1985-86 files for grade 6. One hundred and seventy-nine students were identified for inclusion in the pilot study.

B. Description of Sample Students

1. Number and percent of sample students by Home Language and Language Status:

   Of the 179 sample students, 104 or 58.1% identified their home language as Spanish and 33 or 18.4% had Asian home languages. English was listed as the home language for 42 or 23.5% of the sample students. A detailed breakdown by language status and home language is presented in Table 1.

TABLE 1

Number of Students* by Home Language (HOMELANG)
and Language Status for 1980-81 (ST1)

HOMELANG->	Count / Row Pct / Col Pct	SPANISH 1	ASIAN 2	ENGLISH 3	Row Total
ST1					
1		49	19		68
LEP		72.1	27.9		38.0
		47.1	57.6		
2				35	35
EO/EP				100.0	19.6
				83.3	
3		55	14	7	76
FEP		72.4	18.4	9.2	42.5
		52.9	42.4	16.7	
	Column Total	104	33	42	179
		58.1	18.4	23.5	100.0

*A grade 1 student was included in the study if his/her name was identified in the 1980-81 and 1985-86 language information (census) and/or CTBS reports within the same school.

2. Comparison of Number and Percent of Students between 1980-81 and 1985-86 by Language Status:

Reported below are the number and percent of students for the beginning and ending years of the study. It can be seen readily that 34 or 50% of the 68 LEP students listed in 1980-81 were reclassified as FEP students by 1985-86. The numbers regarding EO/EP students revealed some inconsistency in reporting language status. In some instances, students were classified as FEP and EO interchangeably.

	EO/EP	FEP	LEP
1980-81	35 (19.6%)	76 (42.5%)	68 (38.0%)
1985-86	39 (21.8%)	106 (59.3%)	34 (19.0%)

C. Comprehensive Tests of Basic Skills (CTBS)

CTBS/U and V, CTBS/S and T, and CTBS Español are norm-referenced achievement test batteries published by CTB/McGraw-Hill. CTBS Form S is the forerunner of CTBS Forms U and CTBS Español. CTBS/S has "seven overlapping levels testing six skill areas at kindergarten through grade 12."

CTBS/U contains from five subtests at Level A (for kindergarten) to ten subtests at Level K (for 12th grade).

CTBS Español is an adaptation of reading and math tests of the middle five levels (B, C, 1, 2, and 3) of CTBS/S.

D. Selection of CTBS Scores

The CTBS offers a variety of scores including raw scores, scale scores, percentile ranks, and grade equivalents: the scale score (SS) was selected for use in the study because it was "produced from a single, equal-interval scale of scores across all levels". Scale scores are appropriate for various mathematical manipulations.

E. Statistical Analysis of CTBS Scale Scores

Students included in the study were grouped by their 1980-81 language status and home language for comparison purposes. The significance of differences observed among average scale scores for various groups was determined by using a common statistical technique called one-way

analysis of variance (ANOVA). The Kruskal-Wallis one-way analysis of variance, a non-parametric equivalent of ANOVA, was also run to confirm results derived from the regular ANOVA. Probabilities produced by both procedures were very similar. The probabilities produced by the regular ANOVA are reported in this study. Scheffe's method was used to determine the statistical significance of the difference between individual pairs of average scale scores for any two comparison groups. This is one of the so-called follow-up tests.

F. Sample Students Who Were Tested on CTBS Español

Of the 179 students included in the study, 33 or approximately 18.4% were tested on CTBS Español in 1981. As soon as any of these students were transitioned into English reading and took the regular CTBS, their scale scores were included for comparison.

FINDINGS AND DISCUSSION

In Tables 2 - 4, the figures to the right of a (n), if there are any, represent the number of student groups which obtained statistically significant and higher mean scale scores than the group indicated and for the year specified.

A. Comparison of Achievement in Reading Scale Scores and Percentiles

Table 2 presents average CTBS scale scores, number of students (n), and F-probability from ANOVA in reading for school years 1980-81 through 1985-86. With each progressing school year, a subgroup of the 33 LEP students who were originally tested on CTBS Español in 1980-81 (grade 1) was added in the table for comparison purpose.

Mean scale scores were compared among groups within each of the six school years involved. It can be seen that the overall F-probabilities were significant for all six school years. The Scheffe's follow-up test indicated that the FEP Asian group obtained significantly higher mean CTBS scale scores than the two LEP groups in 1980-81. No significant difference was observed between individual pairs of student groups for 1981-82.

By 1985-86 no group was found to have significantly lower mean CTBS scale scores in reading than the EO/FEP English group.

Figure 1 depicts the differences in average CTBS percentiles (converted from scale scores) for the six groups. The declining and subsequent regaining in percentile status was apparent for group 1 (EO/FEP English), 4 (LEP Spanish), and 5 (FEP Spanish).

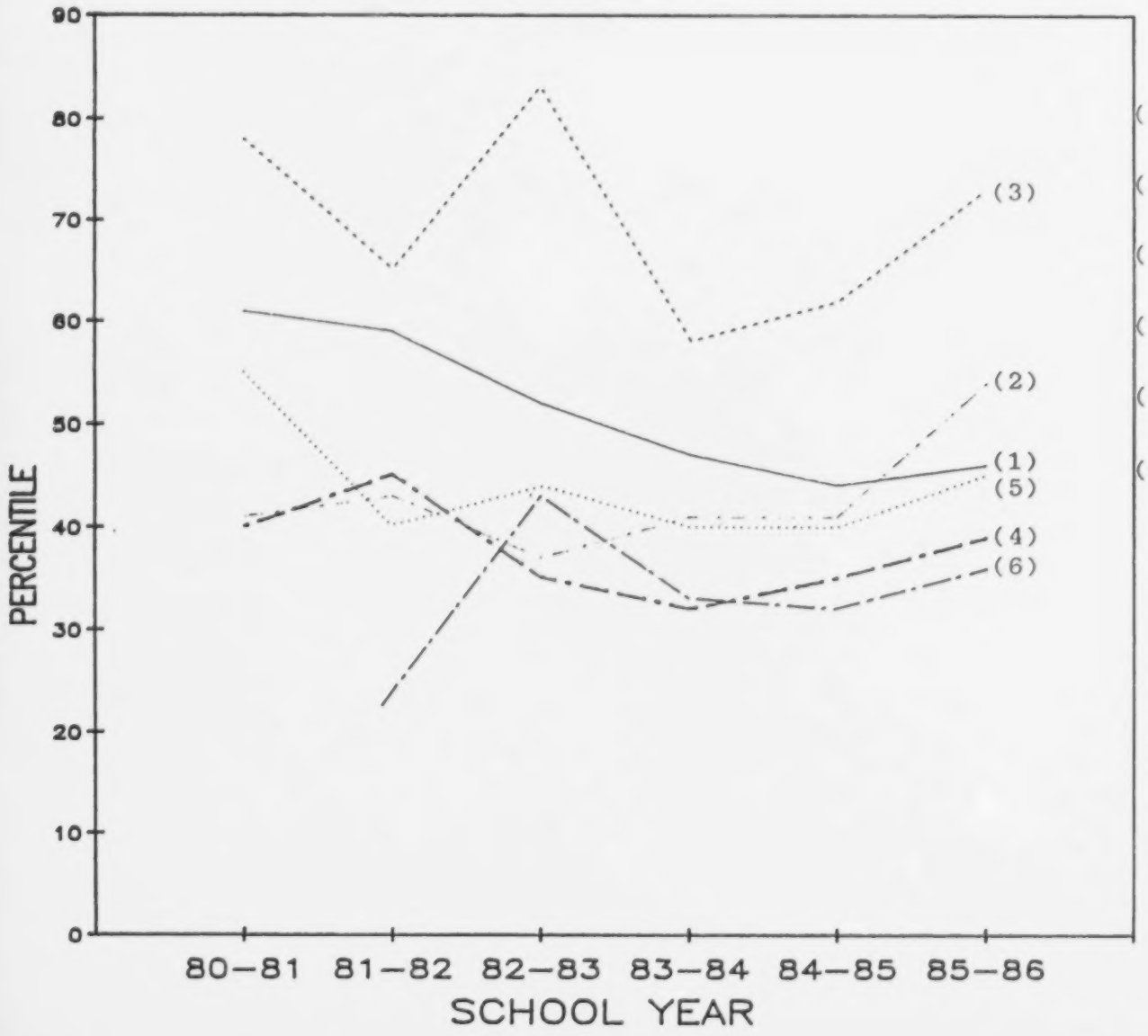
TABLE 2 Mean CTBS Scale Score (SS), Number of Students (n), and F-Probability from Analysis of Variance (ANOVA) in Reading by Language Status and Home Language

School Year	Grade	CTBS Form	(1) EO/FEP English SS(n)	(2) LEP Asian SS(n)	(3) FEP Asian SS(n)	(4) LEP Spanish SS(n)	(5) FEP Spanish SS(n)	(6) LEP&ESP Spanish SS(n)	ANOVA F-Prob
1980-81	1	S	276(39)	252(14)[3]	297(14)	250(14)[3]	268(54)	------	.0019
1981-82	2	S	337(39)	315(11)	349(14)	318(13)	311(53)	281(4)	.0099
1982-83	3	S	382(40)	355(16)[3]	429(13)	350(13)[3]	367(52)[3]	365(14)	.0029
1983-84	4	U	661(40)	640(19)	694(14)	601(16)[1,3]	638(54)	607(31)[1,3]	.0001
1984-85	5	U	685(42)	677(19)	734(14)	653(16)[3]	672(55)[3]	637(33)[1,3]	.0001
1985-86	6	U	712(42)[3]	731(19)	775(14)	691(16)[3]	709(55)[3]	679(33)[3]	.0001

Note: Figures to the right of a (n), if there are any, represent the number of designated groups which obtained statistically significant and higher mean scale scores than the group indicated for the year specified.

FIGURE 1

CTBS READING PERCENTILE SCORES FOR GROUPS BY LANGUAGE STATUS AND HOME LANGUAGE



GROUP:

(1)_____ EO/FEP:ENGLISH

(2)_ _ _ _ LEP:ASIAN

(3)..... FEP:ASIAN

(4)._ _ _ LEP:SPANISH

(5)..... FEP:SPANISH

(6)_._._ FEP:SPANISH*

*Hispanic LEP students tested on CTBS/Español in one or more years.

B. Comparison of Achievement in Language Scale Scores and Percentiles

Table 3 presents similar data on scale scores regarding language. A mean scale score of 197, lowest among the five means, was reported for Asian LEP students in 1980-81. The LEP Asian, LEP Spanish, and FEP Spanish students all obtained significantly lower mean CTBS scale scores than the EO/FEP English students did in 1980-81.

Both LEP student groups showed a tremendous gain in language from grade 1 to grade 2. It should be noted that the differences observed among mean scale scores are not statistically significant for 1981-82.

LEP Asian students improved their relative position in language from the fifth place in 1980-81 to the second place in 1981-82 and maintained in that position thereafter.

On the other hand, the EO/FEP English students dropped from first place in 1980-81 to third place in 1981-84 and then to fourth place in 1984-86. However, they maintained their percentile rankings in the mid 40's.

It is of special interest to note that the LEP and FEP Spanish students made consistent gains throughout the years of the study period. The LEP Spanish students improved their average percentile in the low 20's for 1980-81 to the high 40's for 1985-86. The FEP Spanish students also gained more than 10 percentile ranks from year one (1980-81) to year six (1985-86). Figure 2 illustrates the changes in percentiles obtained by the various comparison groups.

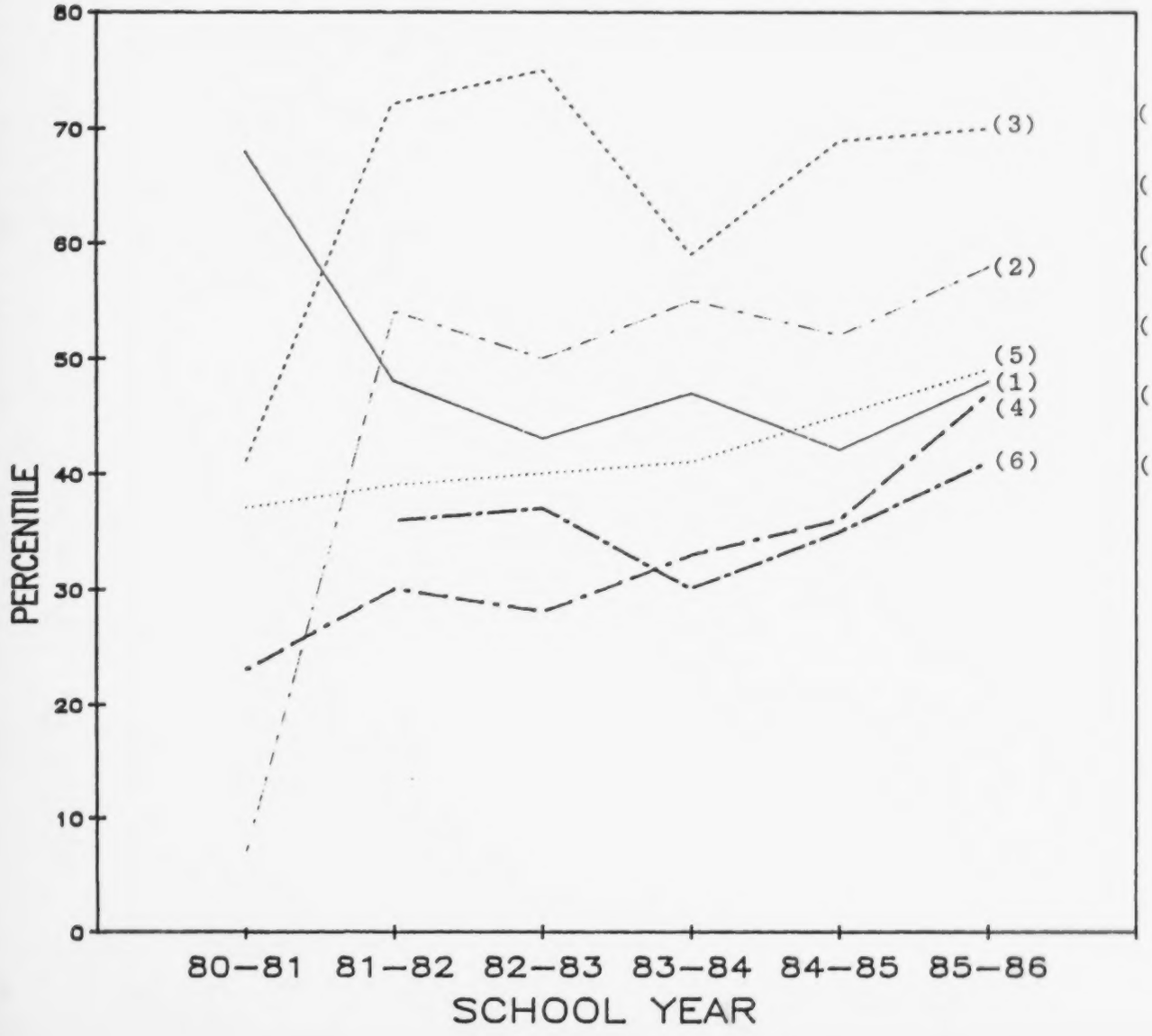
TABLE 3 Mean CTBS Scale Score (SS), Number of Students (n), and F-Probability from Analysis of Variance (ANOVA) in Language by Language Status and Home Language

School Year	Grade	CTBS Form	(1) EO/FEP English SS(n)	(2) LEP Asian SS(n)	(3) FEP Asian SS(n)	(4) LEP Spanish SS(n)	(5) FEP Spanish SS(n)	(6) LEP&ESP Spanish SS(n)	ANOVA F-Prob
1980-81	1	S	305(39)	197(13)[1,3,5]	267(13)	240(13)[1]	264(54)[1]	------	.0001
1981-82	2	S	356(39)	365(10)	395(13)	325(10)	341(52)	336(14)	.0541
1982-83	3	S	394(38)	407(16)	458(12)	364(8)[3]	390(49)[3]	385(14)	.0067
1983-84	4	U	664(40)	682(19)	690(14)	619(16)[2,3]	647(54)	607(30)[1,2,3]	.0001
1984-85	5	U	675(42)[3]	695(19)	721(14)	657(16)[3]	681(55)	653(33)[2,3]	.0001
1985-86	6	U	696(42)	712(19)	732(14)	692(16)	698(55)	679(33)[3]	.0010

Note: Figures to the right of a (n), if there are any, represent the number of designated groups which obtained statistically significant and higher mean scale scores than the group indicated for the year specified.

FIGURE 2

CTBS LANGUAGE PERCENTILE SCORES FOR GROUPS BY LANGUAGE STATUS AND HOME LANGUAGE



GROUP:

(1)——— EO/FEP:ENGLISH

(2)– – – – LEP:ASIAN

(3)..... FEP:ASIAN

(4).— — LEP:SPANISH

(5)..... FEP:SPANISH

(6)—.— ESP:SPANISH *

*Hispanic LEP students tested on CTBS/Español in one or more years

C. Comparison of Achievement in Math Scale Scores and Percentiles

Mean CTBS scale scores, number of students, and F-probabilities related to Math are presented in Table 4. Once again the LEP Asian students scored the lowest mean scale score in math among the five groups in 1980-81. However, no significant difference in mean scale scores was found between any pairs of groups for the first three years.

Three groups of students (EO/FEP English, LEP Spanish and FEP Spanish students) had the same experience in declining percentiles in math for the first three to four years. Starting with the fourth or fifth year they began to regain their lost ground. This may very well be the reflection of the attendance pattern shown by these students (see pages 18-21 in this report).

By 1983-84, the two Asian groups of students generally prevailed in math percentile scores (from the mid 60's to the mid 80's) and maintained their relative leading positions among the six comparison groups.

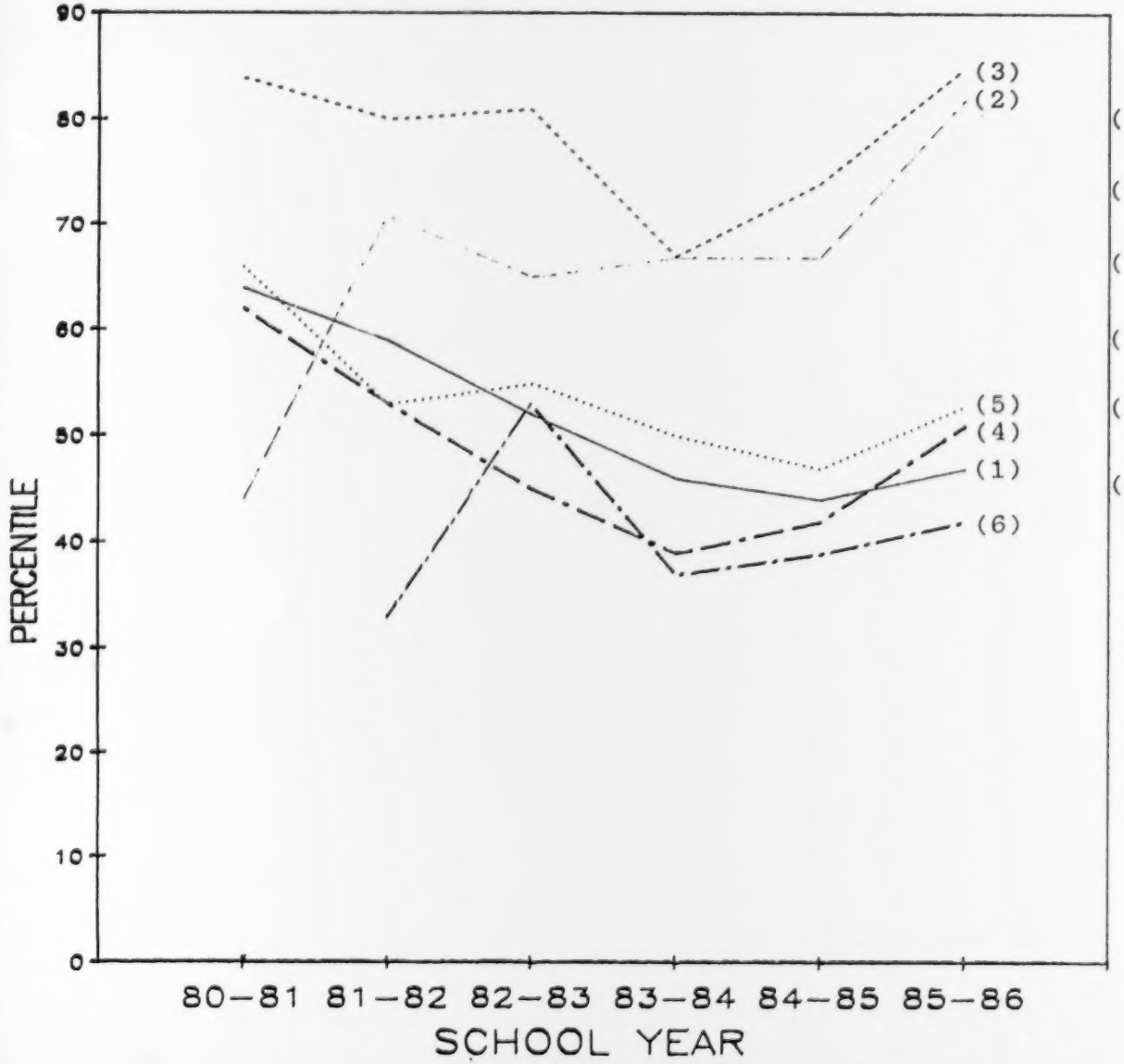
TABLE 4 Mean CTBS Scale Score (SS), Number of Students (n) and F-Probability from Analysis of Variance (ANOVA) in Math by Language Status and Home Language

School Year	Grade	CTBS Form	(1) EO/FEP English SS(n)	(2) LEP Asian SS(n)	(3) FEP Asian SS(n)	(4) LEP Spanish SS(n)	(5) FEP Spanish SS(n)	(6) LEP&ESP Spanish SS(n)	ANOVA F-Prob
1980-81	1	S	271(39)	252(14)	294(14)	270(15)	273(55)	------	.1113
1981-82	2	S	318(38)	329(11)	341(14)	310(13)	311(53)	288(4)	.0254
1982-83	3	S	367(40)	385(16)	409(13)	357(13)	369(52)	368(14)	.0138
1983-84	4	U	667(40)	694(19)	694(14)	653(16)^{2}	673(54)	650(31)^{2,3}	.0001
1984-85	5	U	683(42)^{2,3}	708(19)	714(14)	680(16)^{2,3}	687(55)^{3}	676(33)^{2,3}	.0001
1985-86	6	U	699(42)^{2,3}	732(19)	735(14)	703(16)	705(55)	694(33)^{2,3}	.0001

Note: Figures to the right of a (n), if there are any, represent the number of designated groups which obtained statistically significant and higher mean scale scores than the group indicated for the year specified.

FIGURE 3

CTBS MATH PERCENTILE SCORES FOR GROUPS BY LANGUAGE STATUS AND HOME LANGUAGE



GROUP:

(1)——— EO/FEP:ENGLISH

(2). . . . LEP:ASIAN

(3)..... FEP:ASIAN

(4).— — LEP:SPANISH

(5)..... FEP:SPANISH

(6)—.— ESP:SPANISH*

*Hispanic LEP students tested on CTBS/Español in one or more years.

D. Analysis of Teachers' Comments About Students

Teachers' annual comments regarding students' interests, activities, leadership, attitudes and feelings about self, peers, and school for each of the six years were individually grouped into three classifications. The classifications were assessed in conjunction with the comparison groups defined earlier in this report.

Unfortunately, the results did not show any definite patterns for the groups involved. This may be expected considering the generality and vagueness evident in the teachers' comments.

Attempts were made to locate any possible relationship that might have existed between the classifications of interests, activities, and leadership and those for attitudes and feelings about self, peers, and school. It was found that the relationship proved to be moderate but positive. This means that students who had high interests, participated in various activities, or showed strong leadership, also tended to have very positive attitudes and feelings about self, peers, or school.

E. Analysis of Attendance Information

Attendance records for the selected students were used to determine the numbers of days present and absent for each student for each of six school years. The average numbers of days absent are presented in Table 5 for the six comparison groups. Figure 4 illustrates the absence patterns in a line chart.

A perusal of Table 5 and Figure 4 revealed some specific attendance patterns for the groups involved. In general, the FEP Spanish students reported the highest average number of days absent from school. The average number of days is 10.5 for the six school years.

The second highest average number of days absent of 9.8 was reported for the EO/FEP English group. An average of 9.2 days of absence was observed for the LEP Spanish group.

On the other hand, the average number of days of absence are much lower for the two Asian groups of students. The average for LEP Asian students is 2.7 and that for FEP Asian students is 2.2.

The Hispanic LEP Students who were tested on the CTBS Español in one or more years have an average of 6.8 days of absence.

Considering the final ranking for 1985-86 in reading, language, and math and the attendance patterns, it will be very hard to ignore the

Table 5. Average Number of Days Absent for 1980 : 1985-86
by Language Status and Home Language

Group Number	Language Status	Home Language	80-81	81-82	82-83	83-84	84-85	85-86	Average
(1)	EO/FEP:	English	11.0	10.4	8.2	10.7	9.3	8.9	9.8
(2)	LEP:	Asian	3.3	3.6	0.7	4.9	2.0	1.7	2.7
(3)	FEP:	Asian	2.2	2.3	3.1	2.7	0.8	2.3	2.2
(4)	LEP:	Spanish	9.9	9.3	8.8	11.3	8.8	6.8	9.2
(5)	FEP:	Spanish	10.8	12.1	10.2	11.0	9.9	9.0	10.5
(6)	ESP:	Spanish*	7.0	8.3	4.9	6.9	6.9	6.8	6.8

*Hispanic LEP students who were tested on CTBS Español in one or more years.

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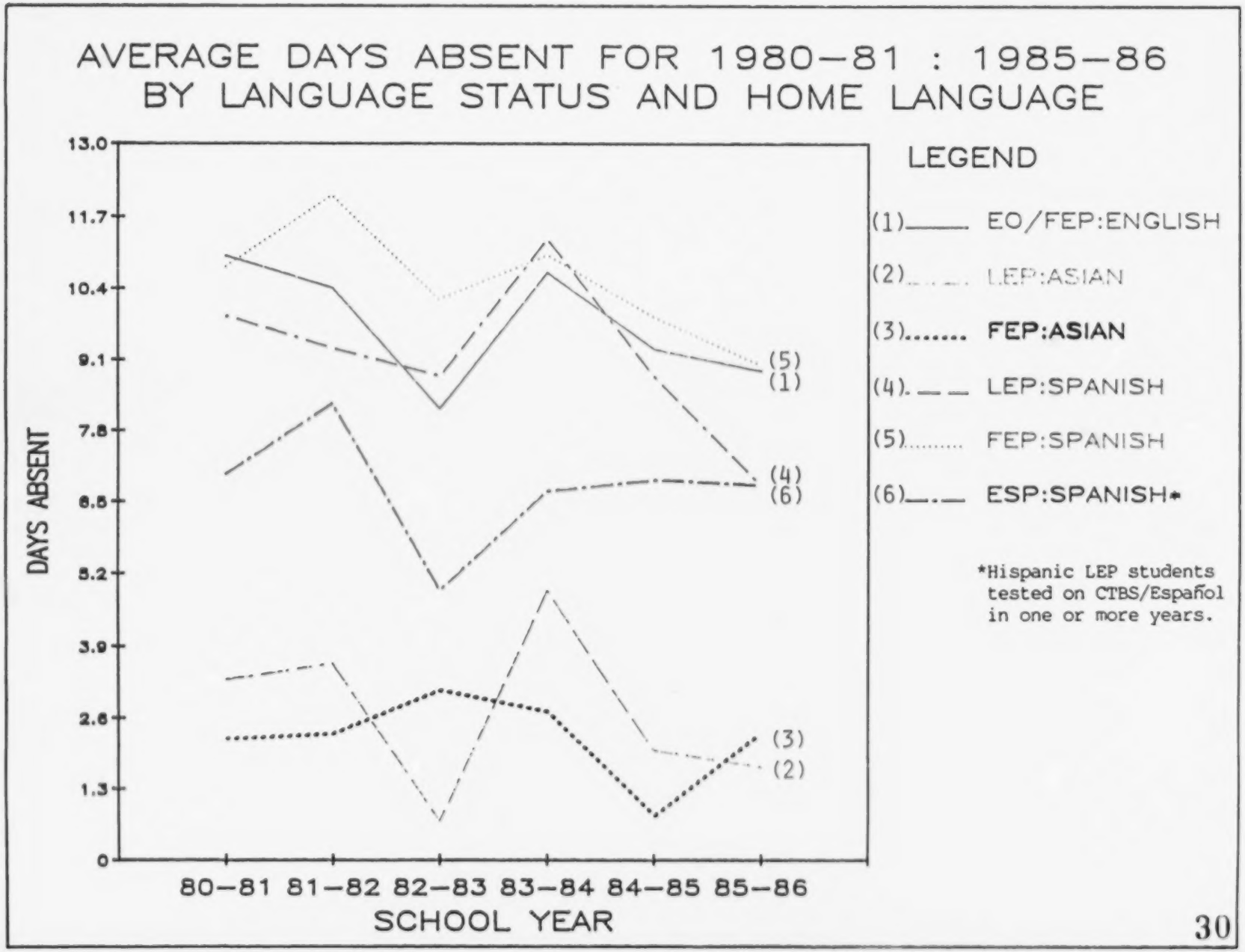
FIGURE 4


AVERAGE DAYS ABSENT FOR 1980–81 : 1985–86
BY LANGUAGE STATUS AND HOME LANGUAGE
DAYS ABSENT
13.0
11.7
10.4
9.1
7.8
6.5
5.2
3.9
2.6
1.3
0
80–81 81–82 82–83 83–84 84–85 85–86
SCHOOL YEAR
(1)
(2)
(3)
(4)
(5)
(6)
LEGEND
(1)_____ EO/FEP:ENGLISH
(2)_ _ _ LEP:ASIAN
(3)..... FEP:ASIAN
(4)._ _ LEP:SPANISH
(5)..... FEP:SPANISH
(6)_._ ESP:SPANISH*
*Hispanic LEP students tested on CTBS/Español in one or more years.

long term effects of attendance on academic achievement. For example, the two Asian groups of students reported the lowest average number of days of absence and the highest final rankings in reading, language, and math.

The average number of days absent declined after 1983-84 with a corresponding improvement in percentile scores in 1983-84 and/or 1984-95 for the EO/FEP English, LEP and FEP Spanish students.

CONCLUSIONS AND RECOMMENDATIONS

In relating to the stated purposes of the study, the following tentative conclusions may be stated:

- In reading, the LEP Asian and the LEP Spanish groups of students had the lowest (but not statistically different) mean scale scores among the five groups of students in 1980-81.

  In language, the LEP Asian, LEP Spanish, and FEP Spanish students all had significantly lower mean scale scores than the EO/FEP English students in 1980-81. They were able to close up the gap by the end of second grade.

  In math, no significant differences were found initially.

- Fifty percent of the 68 sample LEP students were reclassified by the end of 5th grade.

- Hispanic LEP students made consistent gains from 4th grade and on. However, the rate of gain was less than that for the Asian LEP students.

- Hispanic LEP students who had been tested on CTBS Español in three or more years showed some difficulties in closing the gaps in language and reading achievement when they were compared to the EO/FEP English and the Asian students.

- A strong relationship was found between the attendance patterns and the academic achievement of the sample students.

The validity of the study was somewhat reduced due to the following facts:

1. Standards for language status determination used prior to 1981-82 had been less strict before the State requirements were implemented.

2. Some inconsistencies were found in language status reporting.

3. CTBS/U was adopted to replace CTBS/S in 1982-83. These two batteries of achievement tests were based on different normative groups. The inherent nature of interpolation affiliated with conversion tables for two test forms makes interpretation of test results complicated.

The first and the last situations can be eliminated by replicating the current study using data for school year 1986-87 and on. A districtwide effort is needed in order to reduce the inconsistencies in reporting students' language status.

Based on the findings of this pilot study, the following recommendations are warranted.

1. The current study should be replicated and expanded. More than one grade level should be included to complete a more comprehensive assessment. In addition, to determine the status of student achievement, factors other than attendance should be investigated. Proposed survey forms for teacher, parent, and students are attached in Appendix A.

2. A plan to improve attendance of targeted students should be implemented immediately. This practice is not only educationally sound but financially desirable.

Appendix A

Garvey School District

Teacher Rating on Potential Factors
Affecting Student Achievement
During 1987-88

School (1987-88): _____

Teacher: _____

Grade: _____

==========

In general, when compared with other students at the same grade level in school during 1987-88, this student

==========

(1) demonstrated high level of motivation/curiosity for learning.

---

(2) showed very minimal disruptive behavior in classroom.

---

(3) exhibited highly desirable habit/ pattern regarding time-on-task.

---

(4) had highly postive self-concept.

---

(5) was the one that I was glad to have in my class.

---

(6) completed assigned homework with high quality products.

==========

Rating Scale:
1 = Strongly Agree
2 = Somewhat Agree
3 = I'm Not Sure
4 = Somewhat Disagree
5 = Strongly Disagree

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Garvey School District

Parent Survey on
Potential Factors Affecting
Student Achievement
During 1987-88
(Grade __)

Student: _____

School Attended: _____

Teacher: _____

Today's Date: _____/_____/_____

* For each of the following items, please check the response that best describes the situation for the student named.

	(1) Strongly Agree	(2) Somewhat Agree	(3) I'm Not Sure	(4) Somewhat Disagree	(5) Strongly Disagree
1. In general, I was satisfied with the overall performance of my child's school.	_____	_____	_____	_____	_____
2. I was satisfied with the way my child's teacher was handling each of the following programs:					
(a) reading	_____	_____	_____	_____	_____
(b) language	_____	_____	_____	_____	_____
(c) math	_____	_____	_____	_____	_____
3. In general, I felt satisfied with my my child's teacher(s).	_____	_____	_____	_____	_____

4. I expect my child to finish (check the highest level applicable):

_____ intermediate school (grade 8);

_____ high school;

_____ junior college/technical school;

_____ college;

_____ graduate school.

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Garvey School District

Student Survey on
Potential Factors Affecting Achievement
During 1987-88 (Grade ___)

Student: _____

School Attended: _____

Teacher: _____

Today's Date: ___/___/_____

* For each of the following items, please check the response that best describes your situation or fill in requested information.

	(1) Strongly Agree	(2) Somewhat Agree	(3) I'm Not Sure	(4) Somewhat Disagree	(5) Strongly Disagree
1. I liked reading.	_____	_____	_____	_____	_____
2. I liked language.	_____	_____	_____	_____	_____
3. I liked math.	_____	_____	_____	_____	_____
4. My teacher gave me help when I needed it.	_____	_____	_____	_____	_____

5. The amount of weekly homework assigned by my teacher was:

(a) _____ too little _____ just right _____ too much in reading.
(b) _____ too little _____ just right _____ too much in language.
(c) _____ too little _____ just right _____ too much in math.

6. I got extra help on homework (other than from my teacher):

_____ most of the time; _____ sometimes; _____ rarely; _____ never.

7. I expect to finish (check the highest level applicable):

_____ intermediate school (grade 8);

_____ high school;

_____ junior college/technical school;

_____ college;

_____ graduate school.

8. The average time I spent on watching TV on a typical weekday was:

_____ hour(s) & _____ minutes.

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